Qty:

Tuesday, 4/18/2006 10:02:57 AM Kim Johnston

**Process Sheet** 

Customer

: CU-DAR001 Dart Helicopters Services

Job Number : 26672

**Estimate Number** : 10559

P.O. Number

: NIA This Issue

: 4/18/2006

S.O. No. : N/A

: NC

: NIA : 25653

: LANDING GEAR

Part Number

**Drawing Name** 

: D412664203

: HIGH AFT X-TUBE 412

**Drawing Number** 

: D412-664-243 REV B : N/A

Project Number **Drawing Revision** 

Material Due Date

: 5/15/2006

1 Um:

Each

**Previous Run** Written By

Comment

Prsht Rev.

First Issue

Checked & Approved By

Est Rev:F 06-03-29

Reformat: Added D3189-1 K/DS Remove Coments on Pick List JLM

**Additional Product** 

Job Number:



Seq. #:

**Machine Or Operation:** 

Description:

DC 1.0

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D412-664-203 CHG 003

2.0

D6009129



Crosstube Material



Comment: Qty.:

1.0000 Each(s)/Unit

Total:

1.0000 Each(s)

Pick:

Qty Part number Description Batch 1 D6009-129 Crosstube 25947

Check OD = 3.500"; ID = 2.250"

3.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE







Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA166

2-Turn first side as per Folio FA166

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243.

4.0

INSPECT ALL DIM TO DIM SHEET





Comment: INSPECT ALL DIM TO DIM SHEET

MS 06/05/13

Dart Ae	rospace Li	td									
W/O:		WORK ORDER CHANGES									
DATE	STEP	PROCEDURE CHANGE			Ву	Date Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector			
Part No	:	PAR #:	Fault Cate	gory:	NCR: Yes	lo DQA:	Date: _				
					QA: N/	C Closed:	Date: _				
NCR:			WORK ORDI	ER NON-CONFORMA	NCE (NCR)						
D. T. T.	0750	Description of NC		Corrective Action Section	on B	Verification	Approval	Approval			
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Section C	Chief Eng	QC Inspector			

NCR:		WORK ORDER NON-CONFORMANCE (NCR)								
		Description of NC		Corrective Action Section E	3	Verification	Approval	A		
DATE	STEP	Section A Initial Chief Eng	Action Description Chief Eng	Sign & Date	Section C	Chief Eng	Approval QC Inspecto			
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Tuesday, 4/18/2006 10:02:58 AM Kim Johnston User: **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664203 Job Number: 26672 Job Number: Description: Seq. #: Machine Or Operation: MORI SEIKI CNC LATHE LARGE MORI SEIKI 5.0 Comment: MORI SEIKI CNC LATHE LARGE 1-Turn second side as per Folio FA166 2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243. 3-Polish entire outside surface of crosstube 4- Remove sand and plugs 5-Scribe part # and batch # using vibrating stylus as per Dwg D412-664-243 06/05/13 INSPECT ALL DIM TO DIM SHEET 6.0 QC1 Comment: INSPECT ALL DIM TO DIM SHEET SECOND CHECK 7.0 Comment: SECOND CHECK 06.05.17 HAND FINISHING RESOURCE #1 HAND FINISHING Comment: HAND FINISHING RESOURCE #1 Chemical Conversion Coat as per QSI 005 4.1 INSPECT WORKWING WALK QC3/5 9.0 Comment: Inspect work & Chemical conversion Coat BENDING 10.0 Comment: BENDING MACHINE Bend tube as per Dwg D412-664-243 using CNC bender program 412-af and Folio FT010 DIMENSIONAL CHECK 11.0 Comment: DIMENSIONAL CHECK

W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE	Ву	Date	ate Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector			
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Part No:	_PAR #:	Fault Category:	NCR: Yes N	DQA:	Date:
			QA: N/C	Closed:	Date:

NCR:		WORK ORDER NON-CONFORMANCE (NCR)									
		Description of NC		Corrective Action Section B		Verification	Approval Chief Eng	Approval QC Inspector			
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Tuesday, 4/18/2006 10:02:58 AM Date: User: , Kim Johnston **Process Sheet** Customer: CU-DAR001 Dart Helicopters Services Drawing Name: HIGH AFT X-TUBE 412 Part Number: D412664203 Job Number: 26672 Job Number: Description: Seq. #: Machine Or Operation: LANDING GEAR RESOURCE 1 12.0 LANDING GEAR 1 Comment: LANDING GEAR RESOURCE 1 1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551 TC 06-07-7 ( 2-Ream hole to finish size in tube as per Dwg D412-664-243using drill Jig DT8550 & DT8551. Check 27 06-05-3( dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243 HAND FINISHING RESOURCE #1 HAND FINISHING1 13.0 m (86-060-01 Comment: HAND FINISHING RESOURCE #1 Chemical Conversion Coat as per QSI 005 4.1 **OUTSIDE SERVICES** 14.0 Comment: Sub-Contracting OUTSIDE SERVICES Liquid Penetrant Inspection as per QSI 038Or C206/06/02 Issue P/O: 1386 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order PACKAGING RESOURCE #1 PACKAGING 1 15.0 Comment: PACKAGING RESOURCE #1 Inspect for transit damage Ensure copy of NDT results attached to work order. DIMENSIONAL CHECK 16.0 Comment: Inspect for damage & ensure results are as per Dwg D412-664-203 SPRAY PAINTING SPRAY PAINTING 17.0 Comment: SPRAY PAINTING FC 06 06 14 1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2

W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector			
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O6 06 12	16	QC5 - Remove QC6 prompont change.					06.06.12			

Part No:	PAR #:	Fault Category:	NCR: Yes O DQA:	Date: <u> </u>
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		Description of NC		Corrective Action Section B			Annroval	<b>A</b>		
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Tuesday, 4/18/2006 10:02:58 AM Date: , Kim Johnston User: **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664203 Job Number: 26672 Job Number: Description: Seq. #: Machine Or Operation: 18.0 QC14 Inspect Spray Paint **Comment:** Inspect Spray Paint Wrap in plastic bag to protect from scratches 19.0 Abrasion Strip Comment: Qty.: 1.7640 f(s)/Unit Total: 1.7640 f(s) Pick: Qty Part number Description Batch 2 D2856-600(Cut to 10.090") Abrasion Strip **B25676** IT 06-06-27 D2856600 Abrasion Strip 20.0 1.0080 f(s)/Unit Total: 1.0080 f(s) Comment: Qty.: Pick: Batch Qty Part number Description 1 D2856-600(Cut to 10.870") Abrasion Strip <u>B25656</u> T1 06-06 22 21.0 D28961 Support 1.0000 Each(s)/Unit Total: 1.0000 Each(s) Comment: Qty.:-Pick: 06-06-23 **Description Batch** Qty Part number Support B26683 1 D2896-1 Chafing Shield 22.0 D31891 2.0000 Each(s)/Unit Total: 2.0000 Each(s) Comment: Qty.: Pick: Qty Part number Description Batch 2 D3189-1 Chafing Sheild B266 87 27 06-06-32 Clamp(per MIL-DTL-8783C) MS2192028 23.0 Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s) Pick: Qty Part number Description Batch 4 MS21920-28 Clamp 400479 06-06-22

W/O:			WORK ORDER CHA	ANGES		* <b>V</b>	
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Tuesday, 4/18/2006 10:02:58 AM User: , Kim Johnston **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664203 Job Number: 26672 Job Number: Description: Seq. #: Machine Or Operation: MS2192030 clamp(per MIL-DTL-8783C) 24.0 Total: 2.0000 Each(s) Comment: Qty.: 2.0000 Each(s)/Unit Pick: Qty Part number **Description Batch** IT 06-06-22 Clamp 100154 2 MS21920-30 25.0 LANDING GEAR 1 Comment: LANDING GEAR RESOURCE 1 06-06-27 Assemble as per Dwg D412-664-203 INSPECT WORK TO CURRENT STEP 26.0 Comment: INSPECT WORK TO CURRENT STEP PACKAGING 1 27.0 Comment: PACKAGING RESOURCE #1 Pick Packing Kit Bolt 28.0 4.0000 Each(s) Comment: Qty.: 4.0000 Each(s)/Unit Total: Bolt Batch: 1100327 29.0 Bolt Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s) Bolt Batch: M9633 30.0 Comment: Qty.: 18.0000 Each(s)/Unit Total: 18.0000 Each(s) Washer Batch: M)60 19/

Dan Ae	TOSpace	; Llu							
W/O:			W	ORK ORDER CHANGI	ES				
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DATE	CTED	Description of NC		Corrective Action Section		Verific	cation	Approval	Approval
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date		ion C	Chief Eng	QC Inspector
							,		

	sday, 4/18/2006 10:02:58 AM Johnston	Process Sheet
	CU-DAR001 Dart Helicopters Services	Drawing Name: HIGH AFT X-TUBE 412
Guatoiiiti.	OG-DANGOT DARTHOROUPIETS DETVICES	
Job Number:	26672	Part Number: D412664203
Job Number:		
Seq. #:	Machine Or Operation:	Description :
31.0	MS21042L6	Nut
Comme	ent: Qty.: 6.0000 Each(s)/Unit To Nut Batch: <u>M /9099</u>	otal: 6.0000 Each(s)
32.0	QC4	INSPECT 100% KITS FOR COMPLETENESS
	ent: INSPECT 100% KITS FOR COMF	
33.0	PACKAGING 1	PACKAGING RESOURCE #1
Comme	ent: PACKAGING RESOURCE #1	oor DDD D412 664 203
	Identify and pack for shipping as p	)
	PPP Rev:	(106/9/29 (1)
34.0	DC	DOCUMENT CONTROL / '/
Comme	ent: DOCUMENT CONTROL Inspection Level 21	706Kb/27
Job Completion		N 86-06-29

Duitho	.oopaoc L	-tu								
W/O:			W	ORK ORDER CHANG	ES					
DATE	STEP	PR	OCEDURE CHA	NGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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Part No	:	PAR #:	Fault Cate	gory:	_ NC	R: Yes	No DQ	A:	Date:	
						QA: I	N/C Close	d:	Date: _	
NCR:		,	WORK ORD	ER NON-CONFORMA	ANCE	E (NCI	R)			
		Description of NC Corrective Action		Corrective Action Section	on B		Verifi	ration	Approval	Approval
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng		Sign Date	Sect	Verification Section C	Chief Eng	QC Inspector
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DART AEROSPACE LTD	Work Order:	26672
Description: Crosstube Assembly (412 High Aft)	Part Number:	D412-664-243
Inspection Dwg: D412-664-243 Rev: B		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

	Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
***		2.684	+0.005/-0.000	7.688	_			
		2.748	+0.005/-0.000	2.753	<u></u>			
		2.884	+0.005/-0.000	7.889				
-		3.019	+0.005/-0.000	3-024				
	A	3.163	+0.005/-0.000	3.164				
		3.308	+0.005/-0.000	3.310				
		3.429	+0.005/-0.000	3.431				
	SIDE	2.990	+0.005/-0.000	7.994	_			
	SII	2.618	+0.005/-0.000	7.673				
		0.200	+/-0.010	. 200				
		R0.063	+/-0.010	-063				
,		R0.500	+/-0.010	.500				
±.030 -	<del>-&gt;</del> ₹	4.971	+/-0.001	4.971				
		2.684	+0.005/-0.000	2.688	<u></u>			
		2.748	+0.005/-0.000	2.752	/			
		2.884	+0.005/-0.000	2.888	<u></u>			
		3.019	+0.005/-0.000	3.023				
		3.163	+0.005/-0.000	3.168				
		3.308	+0.005/-0.000	3.312				
		3.429	+0.005/-0.000	3.432	/			
	В	2.990	+0.005/-0.000	2.994	<u> </u>			
	SIDE	2.618	+0.005/-0.000	2.620	<u> </u>			
		0.200	+/-0.010	-⊋∞				
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		R0.500	+/-0.010	,500)	<del></del>			
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Measured by:
\$\overline{\sigma\_6}\sumsymbol{NS}\$

Date:
\$\overline{\colors\cdot{13}}\$

Audited by:

\$\overline{\sigma\_6}\$

Date:
\$\overline{\colors\cdot{14}}\$

Prototype Approval:
\$\overline{\colors\cdot{14}}\$

Date:
\$\overline{\colors\cdot{14}}\$

N/A

\*\*The description of the colors of the colors

Rev	Date	Change		Revised by	Approved
Α	04.06.16	New Issue	(P/O D412-664-203)	KJ/JLM	1
В	06.03.09	Dwg Rev updated		KJ/JLM	ad
				- ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	721





DESIGN D		DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECK	KED	2./1	APPROVED	DRAWING NO. REV. B
		M	-11	D412-664-243 SHEET 1 OF 3
DATE		······································		TITLE SCALE
05.0	2.0	)4		CROSSTUBE ASSEMBLY (412 HI AFT) NTS
 Α			01.10.17	NEW ISSUE
В			05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES

SHOP COPY RETURN TO

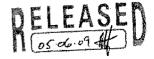
ENGINEERING UNCONTROLLED COPY

SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO.666



Qty	Part Number	Description
Х	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
1	D6009-129	CROSSTUBE
1	D2896-1	SUPPORT
2	D2856-600-1009	ABRASION STRIP
1	D2856-600-1087	ABRASION STRIP
4	MS21920-28	CLAMP
2	MS21920-30	CLAMP
2	D3189-1	CHAFING SHIELD

### **GENERAL NOTES:**

1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

2) MATERIAL: MANUFACTURED FROM D6009-129

FINISHED LENGTH =  $124.09\pm0.020$ 

3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

PAINT OUTSIDE PER DART 005 4.2

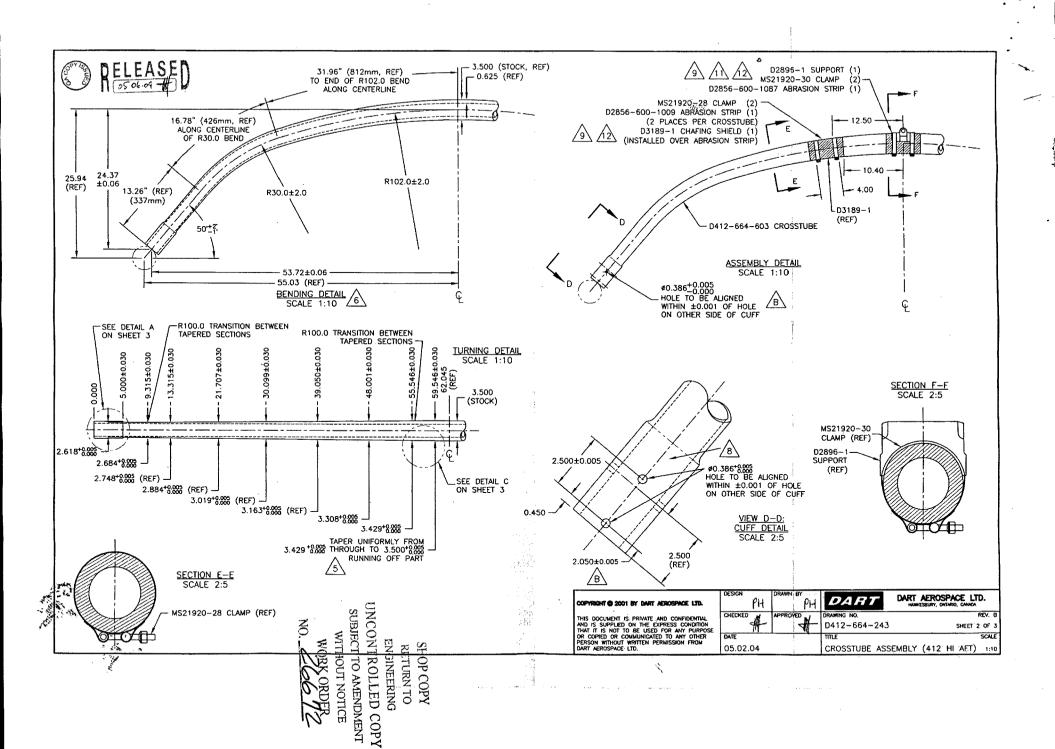
4) PART IS SYMMETRIC ABOUT CENTERLINE.

5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.

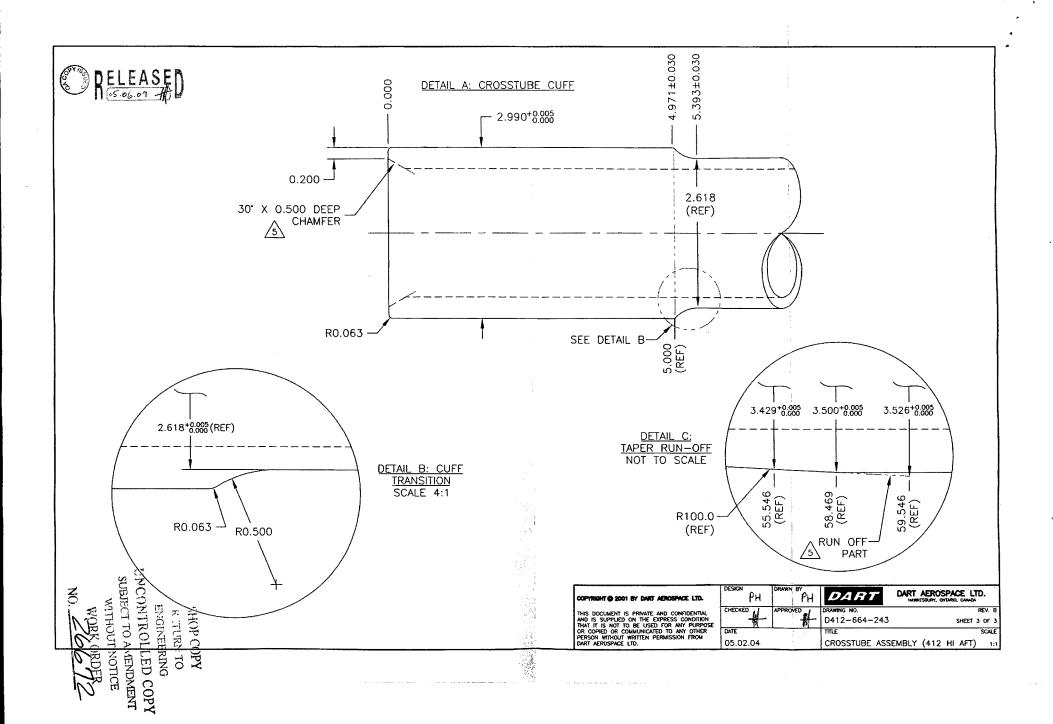
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-600-1009 AND D2856-600-1087 ABRASION STRIPS WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2896-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) IT IS OPTINAL TO TO SEAL EDGES OF SUPPORTS USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

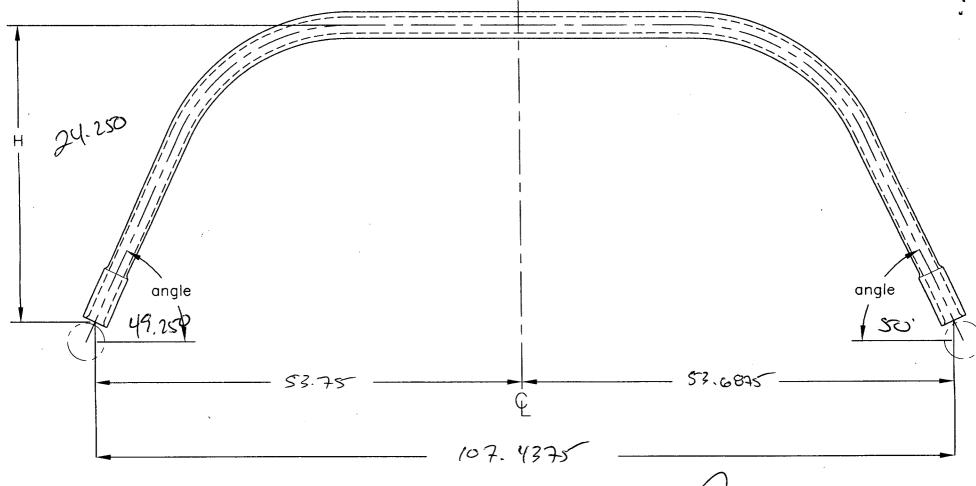
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4. . .





DATE: 06 05-31

DESCRIPTION: 264-203

BATCH NO: 26672

DRAWING: 412-664-243 12.B

H: 24.37

1/2 SPAN: 53-72

TOTAL SPAN: 107.44

ANGLE: 50 +2

66.05.3(



# INTERNATIONAL (1991) INC

681 Ave. Lepine, Dorval, Québec H9P 1G3 Tél.: (514) 636-1000 • Fax: (514) 636-0031

34275 W.O. Nº

A.M.O. Number: 46/90

## **NON-DESTRUCTIVE TESTING REPORT**

### AIRCRAFT / COMPONENT INFORMATION

REGISTRATION:

MODEL/TYPE:

SERIAL NUMBER:

TOTAL HR/LDG:

**OPERATED BY:** 

BASED AT:

### **INSPECTION REQUIREMENTS**

Carry out FPI of (12) cross tube (external surface) as per ASTM E-1417-05 and the Dart QSI 038, Section 4.1.1 (on file at client) - parts delivered to HeathAir.

Qty (7) P/N D058-676-201 S/N's B19627, B19633, B19631, B19635, B19632, B19624 & B19630

Qty (5) P/N D412-664-203 S/N's B27082 B26672 B27084, B27083 & B26673

RADIOGRAPHY

ULTRASONIC

PENETRANT

**MAGNETIC PARTICLE** 

**EDDY CURREN** 

### INSPECTION REPORT

Fluorescent penetrant inspection was performed in accordance with the above requirements on (12) cross tubes.

Note: A Level 3 penetrant was substituted for the requested Level 2 (3 is more sensitive)

Ardrox 970P25E Batch #04B503.

(12) cross tubes PASSED inspection.

MAINTENANCE DESCRIBED ABOVE HAS BEEN PERFORMED IN ACCORDANCE WITH

THE APPLICABLE STANDARDS OF AIRWORTHINESS

DATE

June 8, 2006

INSPECTED BY:

INSPECTIO Not Required STAMP(S)

### **CUSTOMER INFORMATION**

CUSTOMER Dart Aerospace

P.O. NUMBER

1386

ADDRESS:

CONTACT NAME:

@ LABOUR @ MATERIALS GST @ TRAVEL EXPENSES PST **HOTEL EXPENSES** 0

INVOICE NO.

TOTAL \$